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ANIMAL DISEASE ALERT

United States Department of Agriculture • Animal and Plant Health Inspection Service

West Nile Virus: Protecting Your Horses

How It Spreads

West Nile virus (WNV) is a mosquito-borne virus that was first detected in this country in 1999. Since then, evidence of the virus has been found in all 48 of the Continental United States. The virus causes encephalitis or inflammation of the brain and has previously been found in Africa, western Asia, the Middle East, and the Mediterranean region of Europe. Only birds are known to infect mosquitoes with West Nile virus, and mosquitoes spread the disease to horses and humans.

West Nile Virus Transmission Cycle

West Nile Virus

Mosquitoes become infected by feeding on infected birds and pass the virus to other birds, animals, and people.

West Nile Virus

West Nile Virus

During periods of blood feeding there is continual transmission between mosquitoes and their bird hosts. Once a bird is infected, it can transmit the disease to mosquitoes for 4 to 5 days. Mosquitoes may feed on the bird's blood, far from the initial location, and become infected with the virus, furthering the spread of the disease.

The newly infected mosquito may pass the virus to humans or horses. Both horses and people are considered "dead-end" hosts, meaning that while they become infected, they do not spread the infection. Infected horses are not a risk to other horses.

Clinical Signs of West Nile Virus in Horses

- Ataxia or stumbling and incoordination
- Depression or apprehension
- Weakness of limbs, partial paralysis, or the inability to stand
- Muscle twitching or
- Death

Horses may become infected without showing any clinical signs. Fever is not a common sign.

Figure 1—Clinical signs of WNV include stumbling, incoordination, and weakness of limbs. However, horses may become infected without exhibiting any clinical signs. (Photo by Maureen T. Long, College of Veterinary Medicine, University of Florida, and used with permission.)

Protecting Your Animals

It is important to take preventive actions early, prior to the time of the year when mosquitoes are likely to bite and infect horses.

Vaccinate Your Horses

In November 2002, a vaccine intended to aid in the prevention of WNV in horses was licensed by the Veterinary Services division of the U.S. Department of

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Agriculture's Animal and Plant Health Inspection Service. This is a killed vaccine product, and its use is no longer restricted to licensed veterinarians.

In December 2003, Veterinary Services licensed a live vector recombinant vaccine product for use in horses. This product is also available ever the counter.

Then in July 2005, full licensure was given for the first WNV DNA vaccine for animals in the United States. The vaccine contains two WNV proteins but does not contain any whole WNV, live or killed. Once the horse's cells begin making proteins from the virus, they trigger a protective immune response. This technology represents a new generation of vaccines, using specific fragments of a pathogen's unique genetic materials material to stimulate a targeted immune response from the host (the horse).

There is no treatment for WNV once a horse becomes infected. About two out of every three horses that become ill will survive. For horses that survive, a full recovery is likely. Horses vaccinated against eastern equine encephalitis, western equine encephalitis, or Venezuelan equine encephalitis are NOT protected against WNV.

Reduce Mosquito Breeding Sites

You can decrease the chance of your animals' being exposed to the virus by limiting their exposure to mosquitoes. The best way to do this is to reduce mosquito breeding sites.

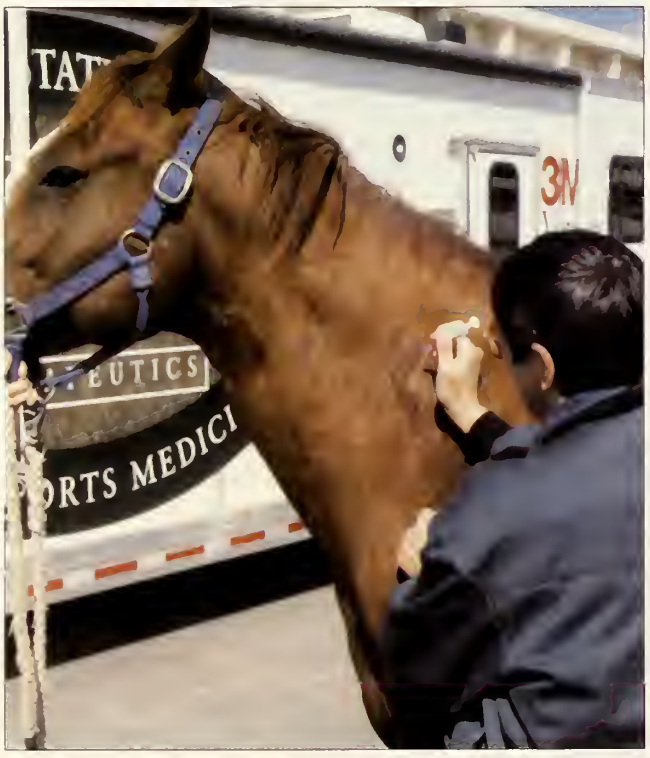

Figure 2—Vaccinate your horses before mosquitoes are likely to bite and infect them. (Photo by Dr. Darien Feary, Colorado State University, and used with permission.)

Mosquitoes can breed in any more than 4 days. The best way to reduce [illegible] to remove any potential sources of standing water in which breeding can take place.

- Dispose of water-holding containers such as old tires.
- Drill holes in the bottom of containers that are left outside.
- Thoroughly clean watering troughs, bird baths, etc., every few days.
- Clean clogged roof gutters every year.
- Turn over wading pools or wheelbarrows when not in use, and do not let water stagnate in bird baths.
- Aerate ornamental pools.
- Clean and chlorinate swimming pools that are not in use and do not let water collect on pool covers.
- Use landscaping to eliminate low spots where standing water can collect.

Screened Housing

Well-maintained insect screening can be useful to reduce exposure to adult mosquitoes if precautions are taken to first eliminate mosquitoes from inside the structure. Fans may reduce the potential ability of mosquitoes to feed on horses.

Insect Repellant

Using insect repellants may help decrease exposure of horses to adult mosquitoes. Because under certain conditions (e.g., perspiration) some products have a limited duration of effectiveness, it is not wise to rely solely on repellants to prevent mosquito exposure. Use repellants according to label instructions. Products containing a synthetic pyrethroid compound (such as permethrin) as the active ingredient serve two purposes: (1) they offer superior safety and repellent efficacy and (2) they are contact pesticides that kill mosquitoes.

Outdoor Exposure

Mosquito species vary in their feeding habits, making transmission possible at any time of day or night. However, a recent epidemiologic study of WNV suggests that keeping horses in stalls at night may be helpful in reducing their risk of infection.

Additional Information

For more information about West Nile virus, see http://www.aphis.usda.gov/vs. For information about human health issues related to West Nile virus, see http://www.cdc.gov.

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